

## Changes in Energy Use and Emissions by Alternative Fuels (relative to RFG, baseline MPG of 28)

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	H2 FCV: solar	H2 FCV: NG	Meth. FCV: NG	EV: CA Mix	EV: NE U.S. Mix	EV: U.S. Mix	HEV: CA Mix	HEV: NE U.S. Mix	HEV: U.S. Mix	E100: Woody Biomass	E100: Herbaceous Biobass	E100: Corn, NG- Fired	E100: Corn, Coal-Fired
Total energy	-53.1%	-32.1%	-15.7%	-57.2%	-25.2%	-25.4%	-33.0%	-26.6%	-26.7%	32.3%	29.3%	25.8%	25.8%
Fossil fuels	-94.4%	-33.2%	-15.5%	-69.3%	-49.0%	-41.6%	-35.5%	-31.4%	-29.9%	-98.5%	-97.2%	-85.5%	-85.5%
Petroleum	-100.0%	-99.9%	-98.0%	-99.6%	-84.9%	-95.9%	-41.5%	-38.6%	-40.8%	-95.8%	-96.2%	-92.0%	-92.0%
VOC: all-location	-95.3%	-91.2%	-70.5%	-98.1%	-97.7%	-98.0%	-58.3%	-58.2%	-58.2%	-21.0%	-21.4%	-13.8%	-16.0%
VOC: in-basin	-98.5%	-98.5%	-76.3%	-99.7%	-99.7%	-99.8%	-59.5%	-59.5%	-59.6%	-21.5%	-21.5%	-21.5%	-21.5%
CO: all-location	-99.3%	-97.6%	-87.7%	-99.0%	-98.9%	-98.9%	-59.4%	-59.4%	-59.4%	-39.0%	-39.3%	-36.7%	-32.8%
CO: in-basin	-99.8%	-99.8%	-90.0%	-99.6%	-99.7%	-99.8%	-59.9%	-59.9%	-59.9%	-39.9%	-39.9%	-39.9%	-39.9%
NOx: all-location	-71.1%	-35.9%	-37.9%	-74.7%	-41.8%	-13.8%	-18.7%	-12.4%	-7.0%	-2.6%	0.2%	80.9%	63.3%
NOx: in-basin	-93.5%	-93.5%	-89.1%	-92.4%	-92.7%	-95.5%	-19.0%	-19.1%	-19.6%	-17.9%	-17.9%	-17.9%	-17.9%
PM10: all-location	-36.0%	-24.4%	-38.1%	-32.1%	33.0%	78.0%	-17.5%	-4.8%	4.0%	782.4%	721.3%	291.7%	377.9%
PM10: in-basin	-36.6%	-36.6%	-36.2%	-33.3%	-26.6%	-33.9%	-13.1%	-11.8%	-13.2%	-29.7%	-29.7%	-29.7%	-29.7%
SOx: all-location	-4.9%	0.8%	-87.0%	7.1%	324.7%	495.8%	-20.2%	43.3%	77.6%	-162.4%	-129.9%	-54.3%	384.3%
SOx: in-basin	-92.1%	-92.0%	-82.1%	-95.8%	86.9%	-52.0%	-40.8%	-4.2%	-32.0%	-86.3%	-86.3%	-86.3%	-86.3%
GHGs	-84.0%	-33.3%	-27.8%	-67.5%	-33.8%	-18.4%	-34.3%	-27.6%	-24.5%	-105.8%	-100.5%	-42.8%	-24.8%
CH4	250.9%	351.2%	441.5%	282.8%	381.5%	603.5%	40.0%	59.8%	104.2%	-27.0%	-27.8%	149.3%	8.5%
N2O	56.2%	70.4%	-40.0%	126.7%	580.0%	845.9%	8.0%	97.7%	150.3%	45.7%	197.6%	1230.0%	1247.1%
CO2	-86.7%	-35.9%	-29.8%	-70.2%	-39.9%	-28.5%	-34.9%	-28.9%	-26.6%	-107.4%	-103.3%	-54.3%	-35.6%

	E85: Woody Biomass	E85: Herbaceous Biomass	E85: Corn, NG-Fired	E85: Corn, Coal- Fired	M100: NG	M85: NG	CNG	LNG	LPG: NG	LPG: Crude	DME: NG (35% MPG Imprv.)	DME: NG (10% MPG Imprv.)	Diesel (35% MPG Imprv.)	Diesel (10% MPG Imprv.)
Total energy	29.6%	27.1%	24.2%	24.2%	18.0%	16.2%	1.1%	14.0%	-11.1%	-11.0%	-11.0%	9.3%	-34.1%	-19.2%
Fossil fuels	-79.0%	-77.9%	-68.2%	-68.2%	18.4%	16.5%	0.0%	14.4%	-10.9%	-10.8%	-10.7%	9.6%	-34.0%	-19.0%
Petroleum	-76.7%	-77.1%	-73.6%	-73.6%	-97.2%	-73.1%	-99.8%	-94.1%	-97.9%	0.3%	-98.5%	-98.1%	-26.1%	-9.4%
VOC: all-location	-18.4%	-18.7%	-12.4%	-14.3%	-15.7%	-14.2%	-87.3%	-82.6%	-63.8%	-63.4%	-59.8%	-58.2%	-64.0%	-63.3%
VOC: in-basin	-19.0%	-19.0%	-19.0%	-19.0%	-21.5%	-18.9%	-92.6%	-91.4%	-64.7%	-64.7%	-64.3%	-64.1%	-64.4%	-64.2%
CO: all-location	-34.1%	-34.3%	-32.1%	-28.9%	-37.8%	-33.1%	-59.3%	-56.7%	-40.1%	-39.5%	-82.9%	-82.3%	-84.1%	-83.8%
CO: in-basin	-34.9%	-34.9%	-34.9%	-34.9%	-40.0%	-35.0%	-59.9%	-59.5%	-39.9%	-39.9%	-85.0%	-85.0%	-85.1%	-85.0%
NOx: all-location	-4.3%	-2.0%	65.0%	50.3%	39.9%	27.8%	-12.4%	28.3%	-8.4%	-13.5%	-12.5%	-0.5%	46.9%	49.0%
NOx: in-basin	-18.1%	-18.1%	-18.1%	-18.1%	-20.4%	-20.1%	-38.7%	-30.5%	-9.1%	-9.0%	-55.8%	-55.2%	69.3%	69.6%
PM10: all-location	646.8%	596.1%	239.6%	311.1%	-27.2%	-24.9%	-31.2%	-14.0%	-46.1%	-37.8%	-23.3%	-18.3%	147.4%	150.6%
PM10: in-basin	-29.9%	-29.9%	-29.9%	-29.9%	-31.6%	-31.5%	-37.1%	-19.1%	-33.6%	-33.5%	-13.9%	-13.1%	255.2%	255.7%
SOx: all-location	-132.0%	-105.0%	-42.2%	321.7%	-81.8%	-61.2%	11.0%	-86.0%	-84.9%	-59.9%	-88.5%	-85.9%	-18.7%	-0.2%
SOx: in-basin	-68.9%	-68.9%	-68.9%	-68.9%	-75.0%	-55.9%	-85.0%	-89.6%	-94.6%	-93.8%	-96.0%	-95.1%	228.4%	303.0%
GHGs	-84.9%	-80.5%	-32.6%	-17.7%	-0.5%	2.1%	4.7%	6.7%	-11.2%	-12.5%	-23.8%	-6.4%	-27.6%	-11.1%
CH4	-27.5%	-28.2%	118.8%	1.9%	716.9%	549.5%	2898.3%	3000.8%	632.3%	-3.0%	496.3%	629.6%	-85.5%	-84.3%
N2O	39.4%	165.5%	1022.2%	1036.3%	-19.8%	-14.2%	117.9%	-25.9%	-38.2%	-23.1%	-28.6%	-23.3%	-31.2%	-26.5%
CO2	-86.2%	-82.8%	-42.1%	-26.6%	-3.6%	-0.3%	-9.5%	-6.6%	-13.9%	-12.4%	-26.1%	-9.1%	-27.3%	-10.6%

(Calculated with GREET1.2 by M. Wang,5/8/97)